

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 26 July 2001 (26.07.01)	
International application No. PCT/US00/22472	Applicant's or agent's file reference RCA 89740
International filing date (day/month/year) 17 August 2000 (17.08.00)	Priority date (day/month/year) 17 August 1999 (17.08.99)
Applicant GRIMES, Kevin, Lloyd et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
05 March 2001 (05.03.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Antonia Muller

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference RCA 89740	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 00/ 22472	International filing date (day/month/year) 17/08/2000	(Earliest) Priority Date (day/month/year) 17/08/1999
Applicant THOMSON LICENSING S.A. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/22472

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/12 H04N5/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 810 784 A (ANALOG DEVICES INC) 3 December 1997 (1997-12-03)	1-3
Y	column 5, line 23 -column 11, line 45 ---	5
Y	US 5 835 155 A (CANTERS PAUL ET AL) 10 November 1998 (1998-11-10) column 4, line 16 -column 22, line 8 -----	5

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

*** Special categories of cited documents :**

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

23 November 2000

Date of mailing of the international search report

04/12/2000

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo.nl,
Fax: (+31-70) 340-3016

Authorized officer

Materne, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/22472

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0810784	A	03-12-1997	US	5784120 A	21-07-1998
			JP	10066103 A	06-03-1998
<hr/>					
US 5835155	A	10-11-1998	US	5717469 A	10-02-1998
			EP	0690611 A	03-01-1996
			JP	8191402 A	23-07-1996
			US	5767914 A	16-06-1998
			US	5771078 A	23-06-1998
			US	5771077 A	23-06-1998
			US	5777686 A	07-07-1998
			US	5764299 A	09-06-1998
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PATENT COOPERATION TREATY

EXPRESS # EL 90232195 US

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PTO/PCT Rec'd 12 FEB 2002
PCT

To:

TRIPOLI, Joseph S.
THOMSON MULTIMEDIA LICENSING INC.
P.O. Box 5312
Princeton, New Jersey 08540
ETATS-UNIS D'AMERIQUE

PPK/PPK

RECEIVED

DEC 13 2001

IS&S

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing
(day/month/year) 05.12.2001

Applicant's or agent's file reference
RCA 89740

IMPORTANT NOTIFICATION

International application No.
PCT/US00/22472

International filing date (day/month/year)
17/08/2000

Priority date (day/month/year)
17/08/1999

Applicant
THOMSON LICENSING S.A. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

European Patent Office
D-80298 Munich
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Fax: +49 89 2399 - 4465

Authorized officer

Schalinatus, D


Tel. +49 89 2399-8242



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference RCA 89740		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US00/22472	International filing date (day/month/year) 17/08/2000	Priority date (day/month/year) 17/08/1999	
International Patent Classification (IPC) or national classification and IPC H04N5/12			
Applicant THOMSON LICENSING S.A. et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of five sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application 			
Date of submission of the demand 05/03/2001		Date of completion of this report 05.12.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Weber-Kluz, F Telephone No. +49 89 2399 8630	



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/22472

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*):

Description, pages:

1-5,7,8	as originally filed			
6	as received on	16/11/2001	with letter of	14/11/2001

Claims, No.:

1-15	as received on	16/11/2001	with letter of	14/11/2001
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Drawings, sheets:

1/5-5/5	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/22472

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-15
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-15
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/22472

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The present application relates to an apparatus (and corresponding methods) for processing a television signal to determine a quality measure of the television signal based on the amplitude of the horizontal synchronisation component of the television signal.

According to the invention, since the amplitude of the horizontal sync signal may vary for different signal source types, the horizontal synchronisation signal is adaptively processed to determine a quality measure of the received television signal by comparing the amplitude of the horizontal synchronisation signal with a threshold amplitude level established in response to the signal source type of the received television signal.

This technique is neither disclosed nor suggested by the available prior as cited in the ISR (in particular EP0810784 relates to an entirely different problem, namely ensuring that a fixed number of samples is provided per line).

The requirements of Article 33(4) PCT are met.

Item VII

Certain defects in the international application

The description (page 3, lines 1 to 17) is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.

REPLACED BY
ART 34 / 2007

6

PTQ/PGT Rec'd 12 FEB 2002

event has occurred. Meanwhile, buffers 124A and 124B of horizontal sync signal detector 112 will be polled every 100 milliseconds until the next change event occurs.

FIGs. 3A, 3B and 3C depict a flow diagram of the horizontal sync detector status polling routine 300. Routine 300 is executed every 100 milliseconds. Status polling routine 300 begins at step 302 and proceeds to step 304. At step 304, routine 300 determines the type of video signal digitizer that is used in signal processor 108. Specifically, the routine checks an EEPROM containing the model number of the television set. From the model number, the routine derives the type of video signal digitizer. The parameters such as delays and threshold values may vary depending upon the accuracy of the digitizer. Thus, to create a versatile routine, routine 300 only sets the variables after confirming the digitizer type. The values used below are typical values.

Routine 300 is designed to operate with buffer 124 for horizontal sync detector 112. Buffer 124 (also referred to as a status register) stores the samples of the horizontal sync signal that is sampled once in each of the video fields. In step 308, buffer 124 is read. At step 310, the horizontal sync status is queried as to whether the status is "OK" or not, i.e., whether the amplitude of the horizontal sync signal sufficient to deem that a television signal is present and of sufficient quality for display. If the answer to query 310 is negative, routine 300 proceeds to "B" in FIG. 3B. If the query at step 310 is affirmatively answered, routine 300 proceeds to step 312.

At step 312, routine 300 queries whether the startup delay count is equal to zero. If the startup delay count is not equal to zero, routine 300 proceeds to step 320. If the query at step 312 is affirmatively answered, routine 300 proceeds to step 314. At step 314, routine 300 queries whether the startup delay count is greater than or equal to 3. The value "3" is equivalent to 300 milliseconds i.e., three horizontal sync samples must be measured after channel change or source change before the "signal-present" variable is set to true. The value is empirically selected to provide a user friendly response to channel changes, i.e., the wait duration is selected to allow system transients to settle. If the query at step 314 is negatively answered, routine 300 proceeds to step 316 where the startup delay is implemented by one and routine 300 proceeds to "A". If the query at step 314 is affirmatively answered, routine 300 proceeds to step 318 wherein the startup delay count is set to zero. Thereafter, a plurality of variables are set at step 320. Specifically, "signal_present" is set to true,

CLAIMS

1. Apparatus for processing a television signal, comprising:
a tuner (104) for receiving a television signal;
5 a signal processor (110) for extracting a horizontal synchronization signal
from the television signal; and
a horizontal synchronization signal detector (112) for sampling the
horizontal synchronization signal, comprising
a horizontal synchronization signal processor (114), coupled to the
10 horizontal synchronization signal detector, for adaptively processing the
horizontal synchronization signal in response to the signal source type to
determine the quality of the television signal.
2. The apparatus of claim 1, wherein the television signal is an NTSC
15 signal.
3. The apparatus of claim 1, further comprising at least one buffer (124)
for storing a sample of the horizontal synchronization signal.
- 20 4. The apparatus of claim 1, wherein the horizontal synchronization
detector (112) is an analog-to-digital converter.
5. A method of processing a television signal comprising the steps of:
receiving a television signal;
25 sampling a horizontal synchronization signal (302) at a first location in a
video field of the television signal; and
processing (308,310) the sample to determine a quality measure of the
television signal using a predefined threshold, wherein the threshold is
established in response to a type of source of the television signal,
30 if the quality measure is less than a predefined threshold, re-sampling
(328,330) the horizontal synchronization signal at a second location in the video
field, and
processing (332) the sample to determine a second quality measure of the
television signal.

6. The method of claim 5, wherein the re-sampling occurring at the second location corresponds an offset of 10 milliseconds from the first location.

5 7. The method of claim 5, further comprising:
blanking (344) a video display if the second quality measure is less than a predefined threshold level.

10 8. The method of claim 7, further comprising:
if the second quality measure indicates a low signal strength, displaying (350) a weak signal message on the video display.

15 9. The method of claim 5, wherein the predefined threshold is established in response to the type of source of the television signal selected from the group comprising cable television, over-the-air television, and playback devices.

20 10. The method of claim 9, wherein the predefined threshold is higher for digital video disk and video cassette recorders and lower for cable television signals and over-the-air broadcast television signals.

25 11. The method of claim 9, wherein the predefined threshold is lowered for video cassette recorders that are in fast forward or rewind mode.

30 12. The method of claim 5, further comprising classifying the quality measure as viewable, weak or faulty.

13. The method of claim 12, wherein a video signal that is classified as faulty is not displayed.

30 14. The method of claim 12, wherein a video signal that is classified as faulty causes an error message to be displayed.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

12

Applicant's or agent's file reference RCA 89740	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/22472	International filing date (day/month/year) 17/08/2000	Priority date (day/month/year) 17/08/1999
International Patent Classification (IPC) or national classification and IPC H04N5/12		
Applicant THOMSON LICENSING S.A. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of five sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 05/03/2001	Date of completion of this report 05.12.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Weber-Kluz, F Telephone No. +49 89 2399 8630



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/22472

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-5,7,8	as originally filed		
6	as received on	16/11/2001	with letter of 14/11/2001

Claims, No.:

1-15	as received on	16/11/2001	with letter of 14/11/2001
------	----------------	------------	---------------------------

Drawings, sheets:

1/5-5/5	as originally filed
---------	---------------------

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

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- ☐ the language of publication of the international application (under Rule 48.3(b)).
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- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/22472

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-15
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-15
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The present application relates to an apparatus (and corresponding methods) for processing a television signal to determine a quality measure of the television signal based on the amplitude of the horizontal synchronisation component of the television signal.

According to the invention, since the amplitude of the horizontal sync signal may vary for different signal source types, the horizontal synchronisation signal is adaptively processed to determine a quality measure of the received television signal by comparing the amplitude of the horizontal synchronisation signal with a threshold amplitude level established in response to the signal source type of the received television signal.

This technique is neither disclosed nor suggested by the available prior art as cited in the ISR (in particular EP0810784 relates to an entirely different problem, namely ensuring that a fixed number of samples is provided per line).

The requirements of Article 33(4) PCT are met.

Item VII

Certain defects in the international application

The description (page 3, lines 1 to 17) is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.

event has occurred. Meanwhile, buffer 124 of horizontal sync signal detector 112 will be polled every 100 milliseconds until the next change event occurs.

FIGs. 3A, 3B and 3C depict a flow diagram of the horizontal sync detector status polling routine 300. Routine 300 is executed every 100 milliseconds. Status polling
5 routine 300 begins at step 302 and proceeds to step 304. At step 304, routine 300 determines the type of video signal digitizer that is used in signal processor 108. Specifically, the routine checks an EEPROM containing the model number of the television set. From the model number, the routine derives the type of video signal digitizer. The parameters such as delays and threshold values may vary depending
10 upon the accuracy of the digitizer. Thus, to create a versatile routine, routine 300 only sets the variables after confirming the digitizer type. The values used below are typical values.

Routine 300 is designed to operate with buffer 124 for horizontal sync detector 112. Buffer 124 (also referred to as a status register) stores the samples of the
15 horizontal sync signal that is sampled once in each of the video fields. In step 308, buffer 124 is read. At step 310, the horizontal sync status is queried as to whether the status is "OK" or not, i.e., whether the amplitude of the horizontal sync signal sufficient to deem that a television signal is present and of sufficient quality for display. If the answer to query 310 is negative, routine 300 proceeds to "B" in FIG. 3B. If the query at
20 step 310 is affirmatively answered, routine 300 proceeds to step 312.

At step 312, routine 300 queries whether the startup delay count is equal to zero. If the startup delay count is not equal to zero, routine 300 proceeds to step 320. If the query at step 312 is affirmatively answered, routine 300 proceeds to step 314. At step 314, routine 300 queries whether the startup delay count is greater than or equal
25 to 3. The value "3" is equivalent to 300 milliseconds i.e., three horizontal sync samples must be measured after channel change or source change before the "signal-present" variable is set to true. The value is empirically selected to provide a user friendly response to channel changes, i.e., the wait duration is selected to allow system transients to settle. If the query at step 314 is negatively answered, routine 300
30 proceeds to step 316 where the startup delay is implemented by one and routine 300 proceeds to "A". If the query at step 314 is affirmatively answered, routine 300 proceeds to step 318 wherein the startup delay count is set to zero. Thereafter, a plurality of variables are set at step 320. Specifically, "signal_present" is set to true,

1. Apparatus for processing a television signal, comprising:
 - a signal input (102) for receiving a television signal from one of a plurality of signal source types, the plurality of signal source types providing television signals of varying qualities;
 - 5 a tuner (104) coupled to the signal input;
 - a signal processor (110), coupled to the tuner, for extracting a horizontal synchronization signal from the received television signal; and
 - a horizontal synchronization signal detector (112) for sampling the horizontal synchronization signal; and
 - 10 a horizontal synchronization signal processor (114), coupled to the horizontal synchronization signal detector, for processing the horizontal synchronization signal to determine a quality measure of the received television signal, and enabling or disabling the display of the received television signal in response to the quality measure, characterized in that
 - 15 the horizontal synchronization signal processor adaptively processes (308,310) the horizontal synchronization signal to determine a quality measure of the received television signal by comparing the amplitude of the horizontal synchronization signal with a threshold amplitude level established in response to the signal source type of the received television signal.
 - 20
2. The apparatus of claim 1, characterized in that the signal source type comprises one of cable, antenna, and video playback device.
3. The apparatus of claim 2, characterized in that
- 25 if the amplitude of the horizontal synchronization signal of the received television signal is determined to be below the threshold amplitude level, the horizontal synchronization signal processor causes the horizontal synchronization signal detector to sample the television signal at a second location to generate a second horizontal synchronization signal, and adaptively processes the second
- 30 horizontal synchronization signal to determine a second quality measure by comparing the amplitude of the second horizontal synchronization signal with the

threshold amplitude level, and enables or disables the display of the received television signal in response to the second quality measure.

4. The apparatus of claim 3, further characterized in that
5 the horizontal synchronization signal detector generates a second horizontal synchronization signal at a second location that corresponds to about 10 ms following the location associated with the horizontal synchronization signal.

5. A method of processing a television signal comprising the steps of:
10 receiving a television signal;
sampling a horizontal synchronization signal (302) at a first location in a video field of the television signal; and
processing (308,310) the sample to determine a quality measure of the television signal using a predefined threshold, characterized in that
15 the threshold is established in response to a signal source type of the television signal,
if the quality measure is less than a predefined threshold, re-sampling (328,330) the horizontal synchronization signal at a second location in the video field, and
20 processing (332) the sample to determine a second quality measure of the television signal.

6. The method of claim 5, characterized in that the re-sampling occurring at the second location corresponds an offset of 10 milliseconds from the first location.
25

7. The method of claim 5, further characterized by:
blanking (344) a video display if the second quality measure is less than a predefined threshold level.

30 8. The method of claim 7, further characterized by:
if the second quality measure indicates a low signal strength, displaying (350) a weak signal message on the video display.

9. The method of claim 5, characterized in that the predefined threshold is established in response to the type of source of the television signal selected from the group comprising cable television, over-the-air television, and playback devices.

5

10. The method of claim 9, characterized in that the predefined threshold is higher for digital video disk and video cassette recorders and lower for cable television signals and over-the-air broadcast television signals.

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11. The method of claim 9, characterized in that the predefined threshold is lowered for videocassette recorders that are in fast forward or rewind mode.

12. The method of claim 5, further characterized by classifying the quality measure as viewable, weak or faulty.

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13. The method of claim 12, characterized in that a video signal that is classified as faulty is not displayed.

14. The method of claim 12, characterized in that a video signal that is classified as faulty causes an error message to be displayed.

20

15. A method of processing a television signal to determine the quality of the television signal for generating an acceptable picture, the method comprising the steps of:

25 receiving a selected television signal from one of a plurality of signal source types;

sampling the television signal (302) to derive a horizontal synchronization component of the television signal; and

30 processing the horizontal synchronization component to determine a quality measure of the television signal and either enabling or disabling the display of the television signal in response to the quality measure, characterized in that

the processing step comprises adaptively processing (308,310) the horizontal synchronization component to determine the quality measure of the television signal by comparing the amplitude of the horizontal synchronization component with a threshold amplitude level established in response to a signal source type of the

5 received television signal.